



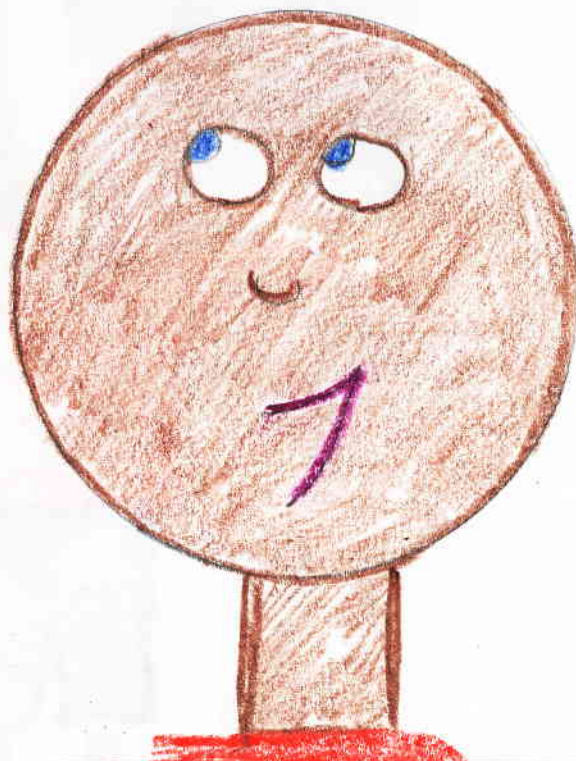
**Paul E. Gon  
and the  
Great Pizza Challenge**



**by Kelsey Whitcomb**

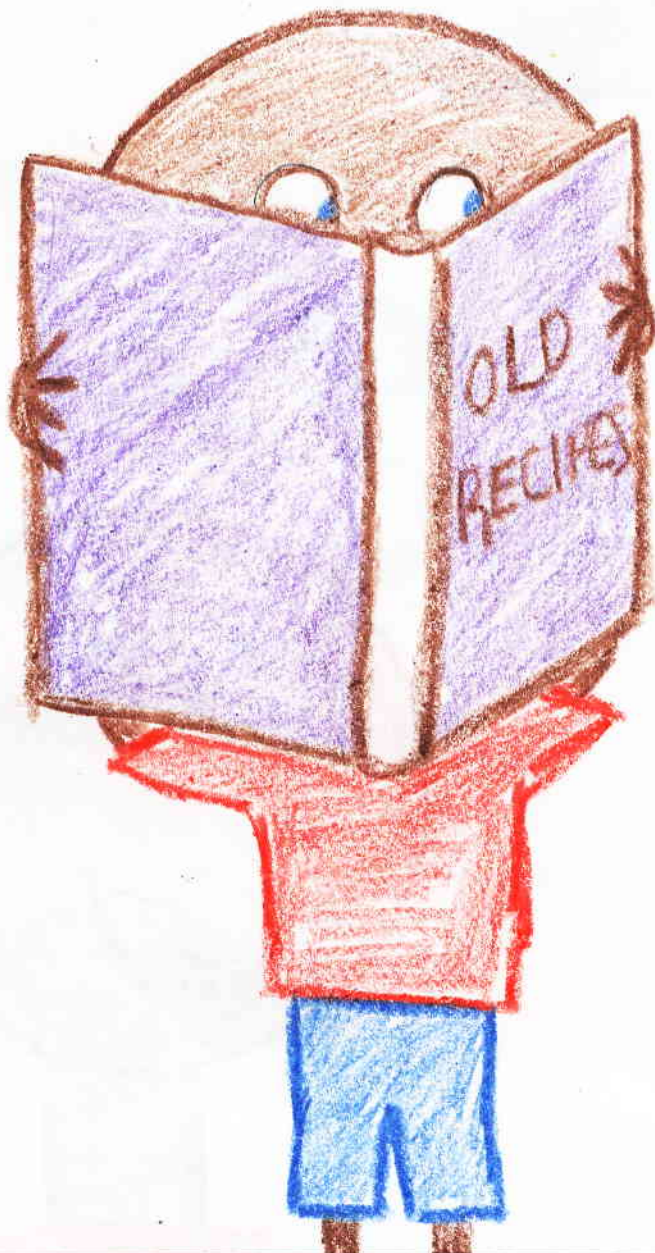


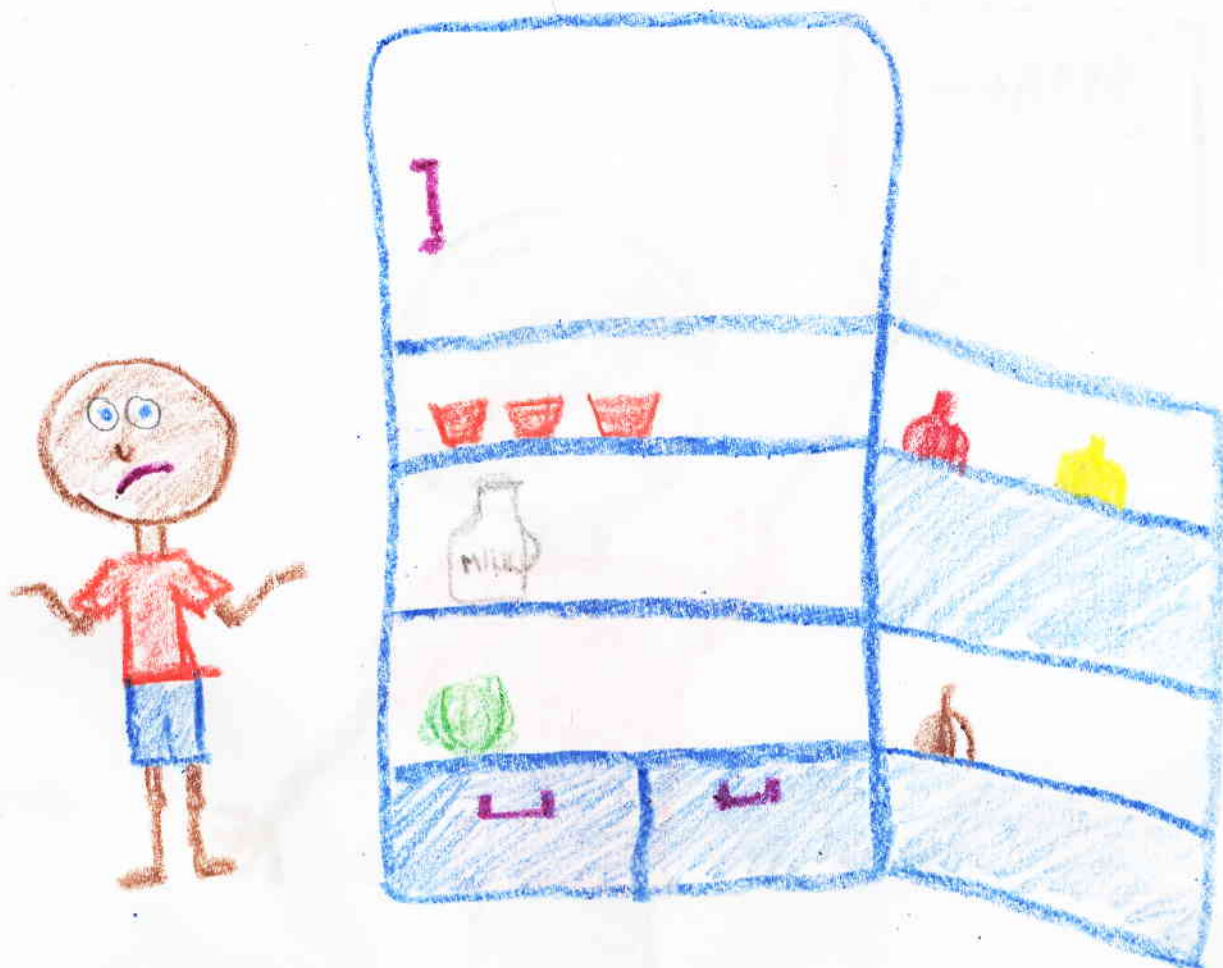
One fine day, Paul E. Gon was sitting at his usual table in his favorite pizza parlor just as he did everyday at lunch, when he suddenly had a brilliant idea. "I sure would love to be able to make great pizza like this," thought Paul. "If I knew how to make it I could have all the pizza I want!"





When he was through with his lunch, Paul hurried to the library. There, he found an old cookbook with a recipe for Personal Pizzas. "Perfect!" he thought as he ran home.



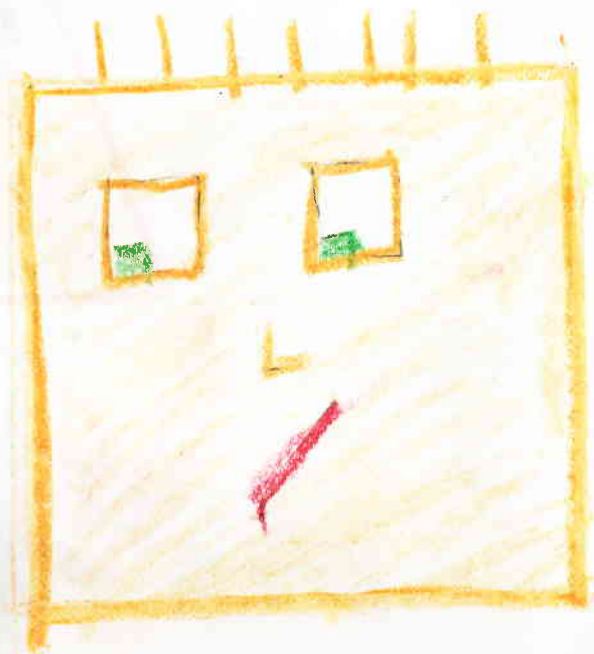
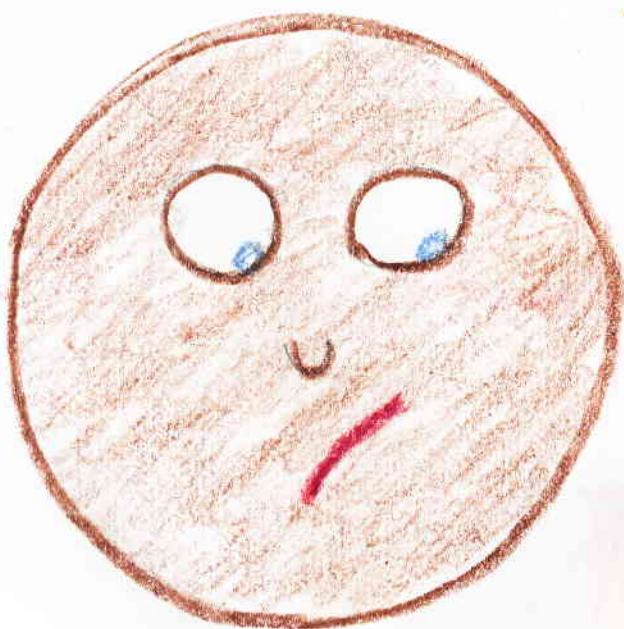


By the time he arrived home, Paul was very excited to get started on his first homemade pizza. He opened the cookbook and began to read the list of ingredients he would need. Paul soon realized that he had a very strange problem indeed. In order for his pizza to achieve perfection, he would need specific ingredients with some very strange names. None of them happened to be in his refrigerator. It was time for a trip to the grocery store.





Paul directed himself to the refrigerated section where, after some careful searching, he found just what he was looking for. In the cooler were rows upon rows of shelves with all sizes of ingredients Paul needed for his pizza. "Let's see," muttered Paul. "For a Personal Pizza I need 2 small octagonal olives, a small hexagonal ham, 4 small square sausages, and a small triangular tomato." As Paul was reaching for the sausages, he heard a familiar voice behind him.



"Hello Paul," said his friend Henry. "How are you?"

"Hey, Henry," Paul replied as he turned around. "I'm just great. I was just picking up some ingredients for a pizza I'm going to make."

"Yum! Pizza sounds wonderful! Would you mind if I join you?"

"I would love to have you join me, Henry, but I'm afraid I only have a recipe for a personal pizza, and there are two of us. This pizza would be much too small."

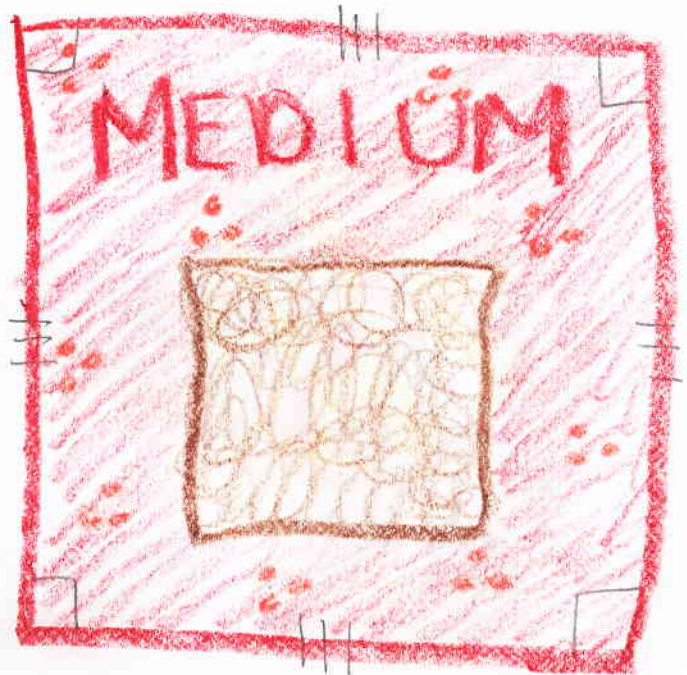
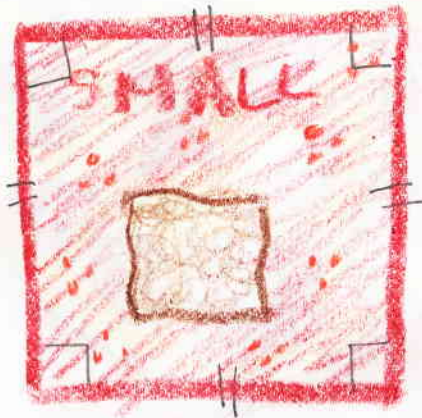




"Why the long faces, boys?" asked Mr. Peters, the grocer, as he came around the corner.

"Well," Paul explained. "I want to share my pizza with my friend Henry, but I only know how to make a personal sized pizza with small ingredients."

"Ah," said Mr. Peters, "I think I can help you."



He pointed to the shelf that held the square sausages. "Look at these two packages." Mr. Peters said, pointing to the small and medium sizes. "They are both squares, yes?" Paul and Henry nodded. "One is just bigger than the other. They both have four equal sides, and four equal corners. The only difference is their size—small sausages for a personal pizza, and medium sausages on a pizza for two!"

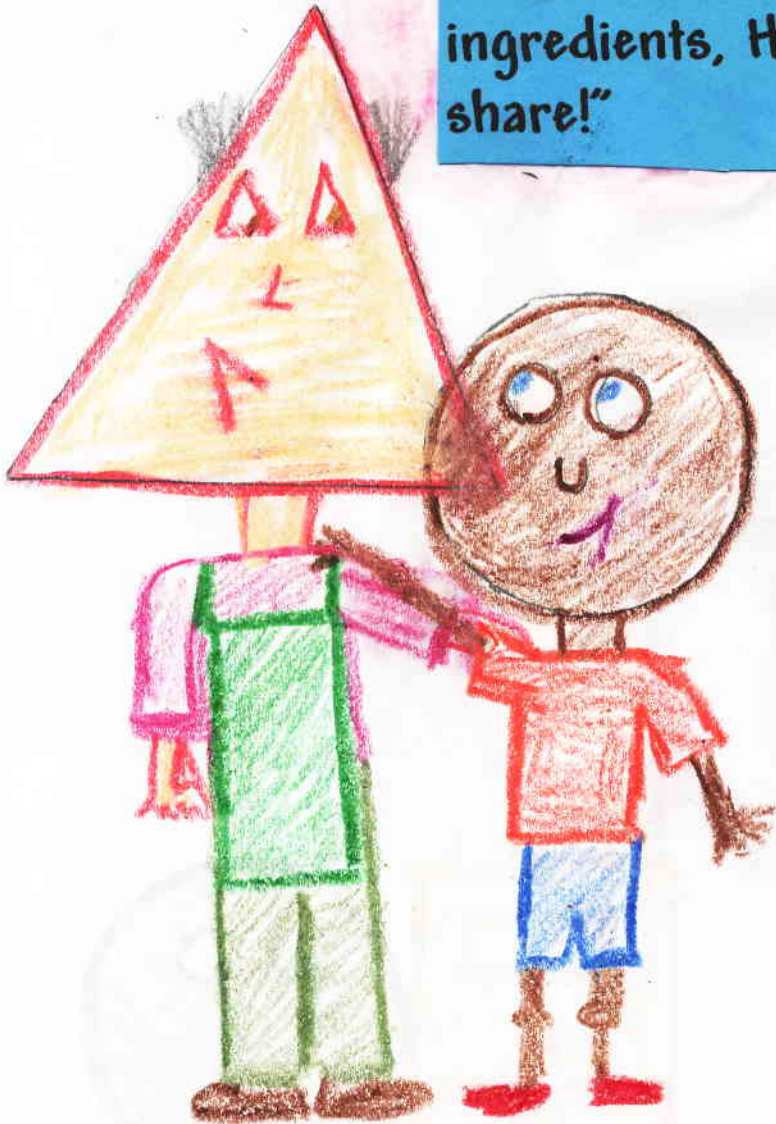




"But what about the tomatoes, Mr. P?" pondered Henry. "Do they work the same way?"

"Of course they do!" he replied. "The same is true for them—three equal sides and three equal **angles**, just different sizes. In fact, all of these toppings are like this. The sizes are all **similar**, so when you put them on a pizza pie that is similar to your smaller one, you will have two similar pizzas that will taste just the same!"

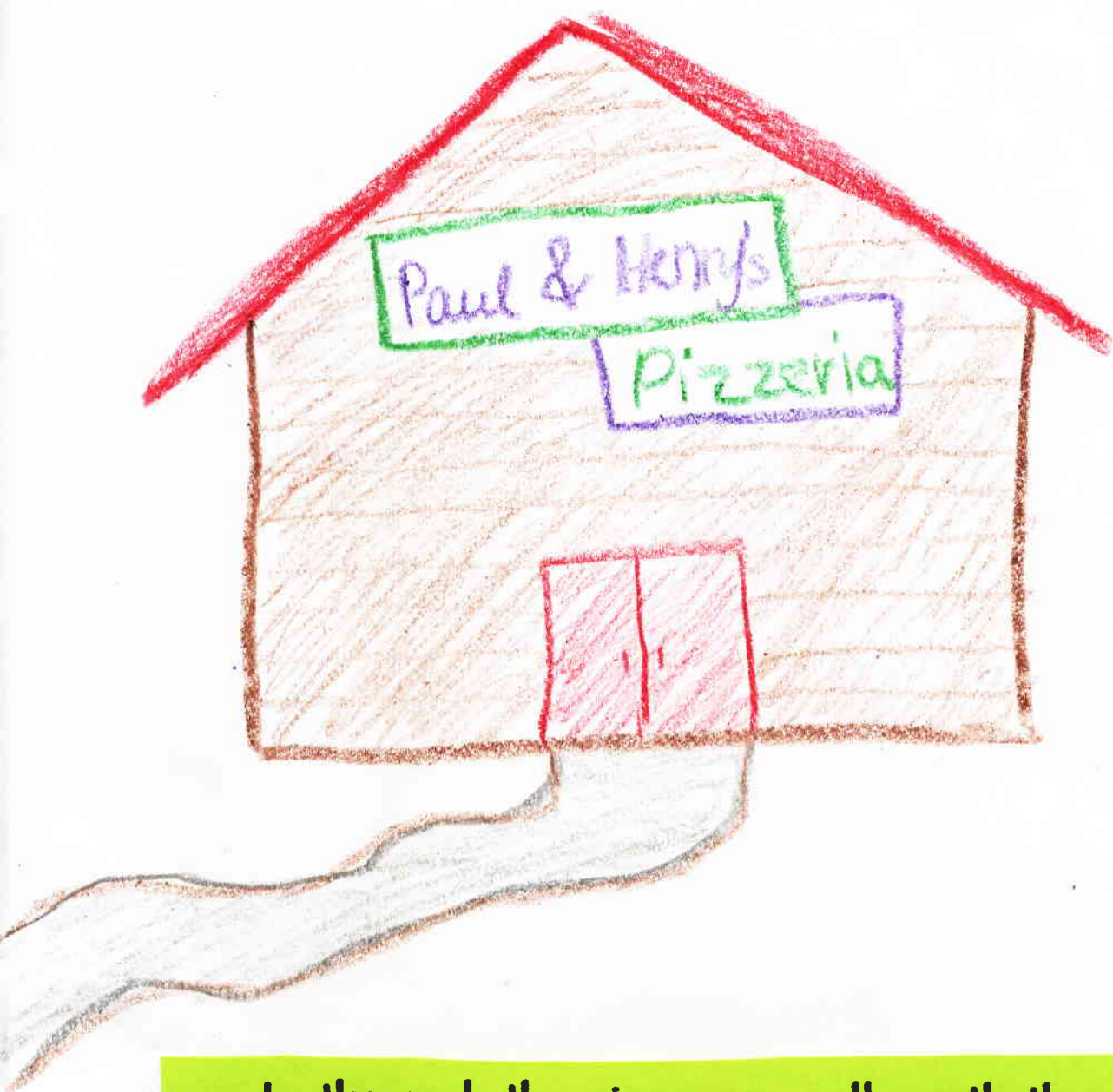
"Wow," Paul exclaimed. "Thank you so much, Mr. Peters! Thanks to your similar ingredients, Henry and I can bake a pizza to share!"





When the boys returned to Paul's house, they got busy slicing, dicing, tossing, and baking. By the time Paul and Henry's pizza for two was done, they were both famished! It was hard waiting for it to cool!





In the end, the pizza was well worth the extra effort. It tasted even better than Paul's old favorite! Paul and Henry loved the pizza so much, that they decided to open their own pizzeria, where, because of their great knowledge of similar ingredients, they can now make any sized pizza they want!



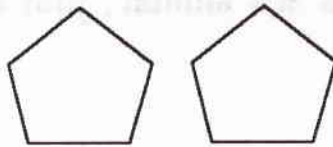


## Glossary

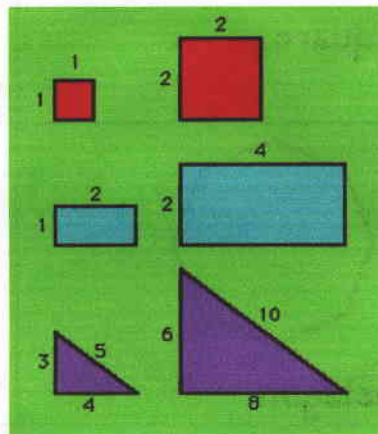
1. octagon - an eight-sided polygon (closed figure with sides)
2. hexagon - a six-sided polygon
3. angle - the intersection of two line segments (sides); a corner
4. similar - figures with the same angle measures and sides that are in proportion (same shape, different size)

## All About Similarity

First, let's start with congruency. You may already know that when polygons are **congruent**, they have sides and angles that all match up and are equal.



**Similar** polygons are like congruent polygons because they have sides and angles that match up, and their angles are the same, but the sides are not. When the second figure is larger than the first, it is called a **dilation**. When the second figure is smaller than the first, it is called a **reduction**.



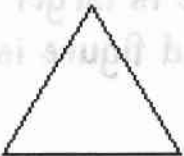


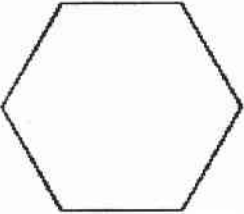
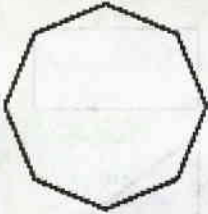
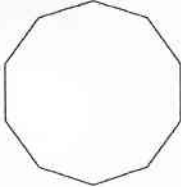


In either a dilation or a reduction, the **corresponding** (matched up) sides must form equal **ratios** or **proportions**. The ratio of corresponding sides is the fraction that is made from their measures. For example:



If the bottom of the small triangle is 2 and the bottom of the larger triangle is 4, then the ratio is 2:4 or 1:2. If the left side of the small triangle is 3 and the left side of the larger triangle is 6, then the ratio is 3:6, which is also 1:2. Since these ratios are the same, the sides are in proportion, and therefore these triangles are similar, just like Paul's triangular tomatoes!

### Some common polygons

triangle 	 square	 pentagon
 hexagon	 octagon	 decagon